Year: 2011-2012

Academic Program: Mathematics  Chair/Dean: Dr Katherine Adams
Division: Math/Science

I. Mission
The mission of the undergraduate program in mathematics at Missouri Valley College is to provide students with opportunities to explore and comprehend their world through mathematics. The program helps students understand mathematics, communicate mathematically, and apply mathematics in preparation for enriching their future endeavors.

II. Goals
• To assist students in developing critical thinking and logical reasoning
• To promote an appreciation for the beauty, scope, and power of mathematics
• To prepare students for careers requiring mathematics or graduate study in mathematics
• To provide students with the mathematical foundation necessary for success in their chosen field of study
• To maintain a supportive environment for the learning of mathematics
• To encourage lifelong learning in mathematics to more fully participate in the modern world
• To employ best practices that promote excellence in teaching and learning

III. Student learning outcomes
1. Students will demonstrate the ability to use symbolic, graphical, numerical, and written representations of mathematical ideas.
2. Students will demonstrate the ability to read, write, listen to, and communicate an understanding of mathematics.
3. Students will use mathematical reasoning to solve problems, and a generalized process to solve problems written in words.
4. Students will demonstrate the ability to use mathematics in everyday life.
5. Students will use basic mathematical skills as well as appropriate technology to enhance mathematical thinking and understanding, solve mathematical problems, and judge the reasonableness of the results.
IV. Course map

<table>
<thead>
<tr>
<th>Course</th>
<th>SLO #1</th>
<th>SLO #2</th>
<th>SLO #3</th>
<th>SLO #4</th>
<th>SLO #5</th>
</tr>
</thead>
<tbody>
<tr>
<td>MA 190</td>
<td>X</td>
<td>X</td>
<td></td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>MA 240</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>MA 250</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MA 315</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>MA 330</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>MA 340</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>MA 350</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>MA 360</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>MA 380</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MA 420</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MA 430</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MA 485</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
</tbody>
</table>

V. Assessment tools

SLO# 1 and #2 are assessed by the students’ research paper and presentation of the paper that they must do for MA 485 Senior Seminar.

Students scores on the ETS Major Field Test in Mathematics and the MVC Senior Assessment Examination in Mathematics (both given in MA 485) are used to assess SLO #3, #4, and #5. For those students who are seeking secondary education certification, their Praxis in Mathematics scores will also be used to assess SLO #3, #4, and #5.

VI. Summary of findings

The scores for the three students in MA 485 Senior Seminar for the year were as follows:

For the research paper and presentation of paper all were 90% or higher.

For the ETS Major Field Test in Mathematics out of 200 points all were in the 140-160 range.

For the MVC Senior Assessment Examination in Mathematics the scores were in the range of 60%-75%.

For the Praxis in Mathematics: Content Knowledge the scores were in the 158-172 range out of 200 points and the following table gives the average of the three students for the test categories.

<table>
<thead>
<tr>
<th>Category</th>
<th>Average raw points earned for the three MVC students</th>
<th>Raw points available</th>
<th>Average performance range of middle 50% of national group who took exam</th>
</tr>
</thead>
<tbody>
<tr>
<td>Algebra and Number Theory</td>
<td>6.3</td>
<td>8</td>
<td>3-6</td>
</tr>
<tr>
<td>Measurement, Geometry, and Trigonometry</td>
<td>9.3</td>
<td>12</td>
<td>5-9</td>
</tr>
<tr>
<td>Functions and Calculus</td>
<td>9.6</td>
<td>14</td>
<td>5-10</td>
</tr>
<tr>
<td>Data Analysis, Statistics, and Probability</td>
<td>6.3</td>
<td>8</td>
<td>5-6</td>
</tr>
<tr>
<td>Matrix Algebra and Discrete Mathematics</td>
<td>5.6</td>
<td>8</td>
<td>3-6</td>
</tr>
</tbody>
</table>
VII. Level of achievement of student learning outcomes

Based on the student’s research paper and presentation of the paper, SLO#1 and #2 were achieved with a high degree of accuracy. The results of the ETS Major Field Test in Mathematics and MVC Senior Assessment Examination in Mathematics indicate that SLO #3, #4, and #5 were achieved with an average degree of accuracy. In addition, the scores for the Praxis in Mathematics: Content Knowledge and the fact that the students passed the exam the first time they took it, indicate that SLO #3, #4, and #5 were achieved with an above average degree of accuracy.

VIII. Faculty/ Course/Student information

Table 1. Program faculty and loads
Program faculty are those who taught at least one course in the program in the past year.

FULL-TIME*
*The definition of ‘full-time’ for this table coincides with our standard MVC definition. Include all full-time faculty who taught in the program regardless of their division affiliation.

<table>
<thead>
<tr>
<th>Name</th>
<th>Division</th>
<th># credit hours taught in program in past year</th>
<th># of advisees</th>
<th>Years of teaching and/or professional experience</th>
<th>Highest degree</th>
</tr>
</thead>
<tbody>
<tr>
<td>Charles “Ed” Leslie</td>
<td>Math/Science</td>
<td>10</td>
<td>15</td>
<td>16</td>
<td>42 MS</td>
</tr>
<tr>
<td>Katherine Adams</td>
<td>Math/Science</td>
<td>27</td>
<td>21</td>
<td>15</td>
<td>14 PHD</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Total credit hours: 37</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

ADJUNCT
Include all adjunct faculty who taught at least one course in the program in the past year.

<table>
<thead>
<tr>
<th>Name</th>
<th>Division</th>
<th># credit hours taught in program in past year</th>
<th># of advisees</th>
<th>Years of teaching and/or professional experience</th>
<th>Highest degree</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Total credit hours</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>% of credit hours taught by adjuncts</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table 2. Course offerings

<table>
<thead>
<tr>
<th></th>
<th>Fall</th>
<th>Spring</th>
<th>Inter-</th>
<th>Summer</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>100-200</td>
<td>300-400</td>
<td>sessions</td>
<td></td>
</tr>
<tr>
<td></td>
<td>level</td>
<td>level</td>
<td>fall/spring</td>
<td></td>
</tr>
<tr>
<td>Face-to-face sections</td>
<td>2 4</td>
<td>2</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Studio sections*</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Internships/practicums</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lab (face-to-face) sections</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Online sections</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Arranged classes</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Classes total</td>
<td>2 4</td>
<td>2</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>General education classes offered**</td>
<td>17 0</td>
<td>15</td>
<td>0</td>
<td>1</td>
</tr>
</tbody>
</table>

*A studio class is defined as one that emphasizes skills and practical application, not lecture/discussion. Examples include studio art, performance theatre, and dance.

**Include all general education classes offered in your program area even if they are not part of the major requirements.

Table 3. Student Profile

<table>
<thead>
<tr>
<th></th>
<th>Fall</th>
<th>Spring</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Male</td>
<td>Female</td>
<td>Total</td>
<td>Male</td>
</tr>
<tr>
<td>Majors</td>
<td>5 9</td>
<td>14</td>
<td></td>
<td>4 9</td>
</tr>
<tr>
<td>Minors</td>
<td>4 0</td>
<td>4</td>
<td></td>
<td>3 1</td>
</tr>
<tr>
<td>Graduating seniors</td>
<td>0 0</td>
<td>0</td>
<td></td>
<td>1 3</td>
</tr>
</tbody>
</table>

IX. Analysis/Interpretation

Based on our findings of the assessment process and faculty/course/student information, it is our conclusion that the mathematics program needs some changes or additions to make it better. Use of the ETS Major Field Test in Mathematics is a good tool for assessment; however, the Praxis gives a better understanding of the degree of the students’ attainment of SLO #3, #4, and #5. Also, since there are only two faculty members who teach the courses for the mathematics program, these faculty members taught an overload each semester. In addition, the upper level Probability and Statistics course was not offered due to lack of faculty, hence, the math majors did not have a choice in the courses they had to take in order to receive a degree in mathematics. Furthermore, since only one faculty member had a PHD in Mathematics, this faculty member taught all of the upper level math courses and the math majors were not offered the opportunity of observing a variety of teaching styles for these math courses.

X. Action plan/Closing the loop

It would be advisable to hire another full time faculty member with a PHD in Mathematics, thus ensuring we have enough quality faculty members to teach in the math program and the students get the best possible education they can in mathematics.

Below: Please list all individuals who assisted in the completion of this report.

Dr Katherine Adams

Updated 4/23/12